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Research of Interaction between Layers of Compressed Composite Columns

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Abstract : In order to investigate the bond between concrete and steel in the circular steel tube column filled with concrete, the 7 series of specimens were tested with the same geometrical parameters but different concrete properties. Two types of specimens were chosen. For the first type, the expansive additives to the concrete mixture were taken to increase internal forces. And for the second type, mechanical components were used. All 7 series of the short columns were modeled by FEM and tested experimentally. In the work, big attention was taken to the bond-slip models between steel and concrete. Results show that additives to concrete let increase the bond strength up to two times and the mechanical anchorage –up to 6 times compared to control specimens without additives and anchorage.

Keywords : concrete filled steel tube, push-out test, bond slip relationship, bond stress distribution
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